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contains most of the narrative that appeared in the sumptuous two-volume edition of Shackleton's work, but omits much of the detailed scientific matter; and it seems too bad that Dr. Mill's fine résumé of Antarctic exploration had to be omitted also. The book, however, is one of the best reproductions of the larger part of an expansive work on Polar exploration at a cheap price that has been made. All the essentials excepting scientific data that the general public prefers to read in simplified form are included.

National Antarctic Expedition, 1901-1904—Magnetic Observations. 274 pp. Map, diagrams. Royal Society, London, 1909. 12½ x 9½.

This volume forms the third one devoted to the observations and results in geophysics obtained on the Antarctic expedition of 1901-1904 under the leadership of the late Captain Scott. The first volume dealt with "Meteorology" and the second with "Physical Observations," in which the tidal, gravity, seismic, auroral and ocean magnetic observations were discussed. The present volume contains the magnetic observations and results obtained at the magnetic observatory from May, 1902, to January, 1904, in McMurdo Sound, latitude 77°50′.8 S. and longitude 166°44′.8 E.—the *Discovery's* winter quarters. The instruments consisted chiefly of a Kew magnetometer, a dip-circle and an Eschenhagen-Toepfer magnetograph.

The strenuous duties of observer-in-charge were performed by Mr. L. C. Bernacchi, who also assisted Dr. C. Chree in the "Discussion of the Observations," which forms the principal part of the volume under review. Besides the usual tables and results which are found in volumes on magnetic-observatory work, Chree devotes considerable space to a discussion of magnetic disturbances of various types. Appendix B contains, furthermore, an examination of Antarctic magnetic disturbances from October, 1902, to March, 1903, which are simultaneous with Arctic disturbances, previously discussed by Prof. Kr. Birkeland of Christiania. While Chree finds correspondences, he also shows that there are certain disagreements from the effects predicted by Birkeland, and so he is led to making a critical analysis, for an account of which the interested reader must be referred to the original volume. L. A. BAUER.

Vorlaüfiger Bericht über die meteorologischen Beobachtungen der Deutschen Antarktischen Expedition, 1911-1912. Von E. Barkow. *Veröffentl. d. k. Preuss. meteorolog. Instituts, No. 265.* (Abh., Vol. 4, 1913, No. 11), pp. 1-11.

This is the preliminary report of the Filchner expedition to the Antarctic on the *Deutschland.* The scientific reports have proved to be of very considerable value to glacialists and meteorologists. The expedition extended our knowledge of the Weddell Sea southwestward beyond Coats Land to the newly discovered Vahsel Bay and Luitpold Land. Three months were spent on this bay, and the meteorological observations show a close relationship in severity of the temperatures with those recorded from the similarly high latitude of Ross Sea. The sudden changes of temperature reported by the Swedish expedition in West Antarctica were not experienced. Observations over the inland ice and simultaneously upon the vessel, and covering a period of several days, showed the temperature above the inland ice to be colder by 2° C. A noteworthy uniformity both of temperature and of wind velocity was the rule. With an average wind velocity of as much as three-fourths of the Beaufort scale there were few storms (8 or more of Beaufort scale), and even fewer calms. There was much less constancy in the winds than observations at other Antarctic stations have shown. The westerly winds were most common, which, with the manner of shifting, indicated the presence of a low area eastward of the drift of the vessel. At the Vahsel Bay station generally clear weather prevailed, owing to the proximity of the inland ice, but farther off shore a cloudy sky was the rule. As is generally true in Antarctica, greater cloudiness characterized the summer, for which season the unusually high value of 9 was obtained. The precipitation was throughout very slight, and mainly in the form of hoar-frost. The precipitation for the entire year, based upon somewhat inexact data, amounted to only 97.5 mm.

Of more special interest are the observations made of the troposphere by means of kites, captive balloons and pilot balloons, in all 255 ascents distributed over 209 days. Almost throughout, these observations reveal a strong lower inversion, which was more marked in the winter season, and which was generally in excess of 10° C. (maximum 19.5° C.). Above the inversion there generally followed an isothermal layer or one of only slight temperature fall, so that in general the abnormal condition extended upward to a height of 2000 meters (about 1¼ miles). In the spring particularly an alternation of layers (Blätterstruktur) was characteristic of this lower zone within the troposphere. The relationship of such inversions in the troposphere, which have now been proved also for the northeastern and the western margins of the continental glacier of Greenland, to the fixed glacial anticyclone above the inland ice, is obvious, though not referred to by Barkow.

With pilot balloons it was found possible, by reason of the great clarity of the atmosphere, to carry the observations beyond the ceiling of the troposphere, which was here found to have an altitude of somewhat less than nine kilometers (about 5¼ miles), which level was usually made apparent by the sudden change of the wind direction. Meinardus believes that easterly winds are the rule up to an altitude of 2,000 meters, above which is to be found the westerly, polar whirl which is so important a feature in Ferrel's theory of wind circulation. Barkow's results indicate that this whirl, if it exists, is likely to be above the troposphere ceiling. Up to this level the winds, with strong northerly components, were generally easterly or southeasterly, but suddenly change at the top of the troposphere to a southwesterly direction. It must be borne in mind that these observations were made at the margin of the inland ice and on the borders of an area of low atmospheric pressure. WILLIAM H. HOBBS.

PHYTOGEOGRAPHY AND ZOOGEOGRAPHY

Lehrbuch der Paläozoologie. Von Ernst Freiherr Stromer von Reichenbach. 1. Teil: Wirbellose Tiere. 342 pp. 2. Teil: Wirbeltiere. 325 pp. Ills., indexes. (Naturwissenschaft und Technik in Lehre und Forschung.) G. B. Teubner, Leipzig, 1909 and 1912. Mk. 10 each. 9½ x 6½.

This work gives a very good account of fossil animals. The author discusses the characteristics of the various animal groups, their relationships, and gives many typical examples of each group. The geological distribution and the development of the various animal groups are also included.

Following each group discussion is an analytical table of the orders of the group. This table not alone gives the characteristics of the order, but the distribution of the members of the order in geological time. Extensive references are given by groups. The illustrations are excellent and well adapted to bring out clear notions of the animal types described. The internal structure of a few animals is given.

The geographical distribution of the extinct mammals receives considerable attention. A table of the geographical distribution of mammals in the Mesozoic and Tertiary ages is given on page 224 of the second volume. Considerable attention has also been given to ecology and evolutionary theories. The work is well done and authoritative, and should be on the shelves of every zoological library. R. W. SHARPE.

METHODOLOGY AND TEACHING

South America. A Supplementary Geography. By J. F. and A. H. Chamberlain. (The Continents and Their People.) 189 pp. Ills., index. The Macmillan Co., New York, 1913. 55 cents. 7½ x 5.

The object of this book is "to present the physical and human phases of geography in such a way as to cause them to appeal to the interests of children and to lead pupils to see the more obvious relationships between the two." This object is well attained.

The seventeen chapters treat of the continent and its parts as follows: One chapter to the continent as a whole, eleven chapters to the respective